CLAIMS

1. A thermoplastic composite, comprising a base transparent thermoplastic layer, conducting the light, having a thickness generally in the range 3-40 mm, preferably 6-25 mm and a diffusing light layer, having a thickness generally in the range 10-1500 micron, preferably 30-1000 micron, placed on one or both surfaces of the base layer, said diffusing layer being characterized in that it is constituted by thermoplastic material containing barium sulphate in amount by weight, expressed as per cent ratio on the total weight of the diffusing layer, in the range 0.01-2%, preferably 0.1-0.8%, still more preferably 0.1-0.6%, the barium sulphate having average particle sizes in the range 0.1-50 micron, preferably 0.5-10 micron, the composite sides being at least ≥ 10 cm, preferably in the range 20 cm-1 m, said composite having one or more edge lit, the composite area being greater than 100 cm^2, preferably greater than 600 cm^2.

2. A panel according to claim 1, wherein the composite panel contains only one diffusing layer.

3. A panel according to ~~claims 1-2~~ claim 1, wherein the source of light is placed on two opposite edges.

4. A panel according to ~~claims 1-3~~ claim 1, wherein the thermoplastic material of which the base layer and the diffusing

layer containing barium sulphate are constituted, is selected from a (meth)acrylic (co)polymer, polycarbonate, polystyrene, PET, copolyesters constituted by glycol modified PET such as for example dietylenglycol, butandiol, hexandiol and 1,4-cyclohexane dimethanol or mixtures of PET with these copolymers.

5. A panel according to claim 4 wherein the thermoplastic (meth)acrylic (co)polymer is constituted by an alkyl (meth)acrylate homopolymer or by a copolymer derived from an alkyl (meth)acrylate with at least one monomer having one or more ethylenic unsaturations copolymerizable with the alkyl (meth)acrylate.

6. A panel according to claim 5 wherein the alkyl (meth)-acrylate is selected from the compounds wherein the alkyl group has from 1 to 8 carbon atoms, such as methyl, ethyl, propyl, isopropyl and butyl (meth)-acrylate.

7. A panel according to ~~claims 4-6~~ claim 4, wherein the ~~thermoplastic~~ polymer is constituted by ~~methyl~~ methacrylate homo-poly-ers or methyl~~methacrylate~~ copolymers with (meth)-acrylic ~~esters~~ or (meth)acrylic acids.

8. A panel according to claim 7 wherein the thermoplastic polymer is constituted by methylmethacrylate/alkyl acrylate copolymers, preferably ethyl acrylate.

9. A panel according to claim 5 wherein the (meth)acrylic thermoplastic (co)polymer comprises from 70 to 100% by weight of alkyl methacrylate and from 0 to 30% by weight, preferably from 3 to 10% by weight, of one or more comonomers containing one or more ethylenic unsaturations, said comonomers being copolymerizable with the alkyl methacrylate.

10. A panel according to ~~claims 1-9~~ claim 1, wherein the composite panel is obtained by coextrusion, by casting, or by compression molding or by coupling of a film in calendering, or optionally by gluing.

11. A panel according to claim 10, wherein the composite is prepared by coextrusion of the base sheet of thermoplastic polymer and of the diffusing layer of thermoplastic polymer containing the barium sulphate, or by compression molding of the thermoplastic polymer layer containing barium sulphate, obtained by extrusion, on a base sheet of thermoplastic polymer, said sheet obtained by extrusion or casting.

12. A panel according to ~~claims 1-11~~ claim 1, wherein on one or more edges of the composite panel, on which the source of light is not positioned, a reflecting film is placed.

13. A panel according to ~~claims 1-12~~ claim 1, wherein the thermoplastic polymer of the base sheet can contain particles of

susbstances diffusing light, both of polymeric and inorganic type.

14. A panel according to claim 13 wherein the polymeric particle average sizes are in the range 0.1-200 micron, preferably 0.1-50 micron, more preferalby 1-15 micron, the amount is in the range 5-1000 ppm, prefrably 100-200 ppm.

15. A panel according to ~~claims 1-14~~ claim 1 wherein on the free surface of the composite base sheet parallel adhesive bands are present, having a width of some millimeters to some centimeters, preferably from 0.5 to 20 mm, placed at a distance the one from the other generally within the indicated limits, said distance being also greater than the band width.

16. Luminous signs comprising the composite panel of ~~claims 1-15~~ claim 1.